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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,153	09/20/2005	Toshikazu Okubo	38915.00045	1053

44955 7590 07/03/2008  
SQUIRE, SANDERS & DEMPSEY L.L.P.  
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SAN FRANCISCO, CA 94111

EXAMINER
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NGUYEN, KHIEM D

ART UNIT	PAPER NUMBER
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2823

MAIL DATE	DELIVERY MODE
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07/03/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/550,153	<b>Applicant(s)</b> OKUBO ET AL.	
	<b>Examiner</b> KHIEM D. NGUYEN	<b>Art Unit</b> 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 1-4,6-10,12-16,18,19 and 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5,11,17 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/20/05</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicants' election without traverse of Group II of claims 5, 11, 17 and 20 in the reply filed on April 28<sup>th</sup>, 2008 is acknowledged. Claims 1-4, 6-10, 12-16, 18-19, and 21 withdrawn from further consideration by the Examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Oath/Declaration***

2. The oath/declaration filed on September 20<sup>th</sup>, 2005 is acceptable.

### ***Priority***

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 5, 11, 17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Sonnenberg et al. (U.S. Patent 5,223,118).

In re claim 5, **Sonnenberg et al.** disclose an apparatus for analyzing a copper electroplating solution, which comprises using the method for analyzing a copper electroplating solution of claim 1 (see col. 4, line 50 to col. 5, line 21 and FIG. 1),

1. A method for analyzing a copper electroplating solution containing an additive, which comprises determining the time-dependent potential change at a cathode current density of  $0.1 - 20 \text{ A/dm}^2$  to thereby judge the fillability with the copper electroplating solution.

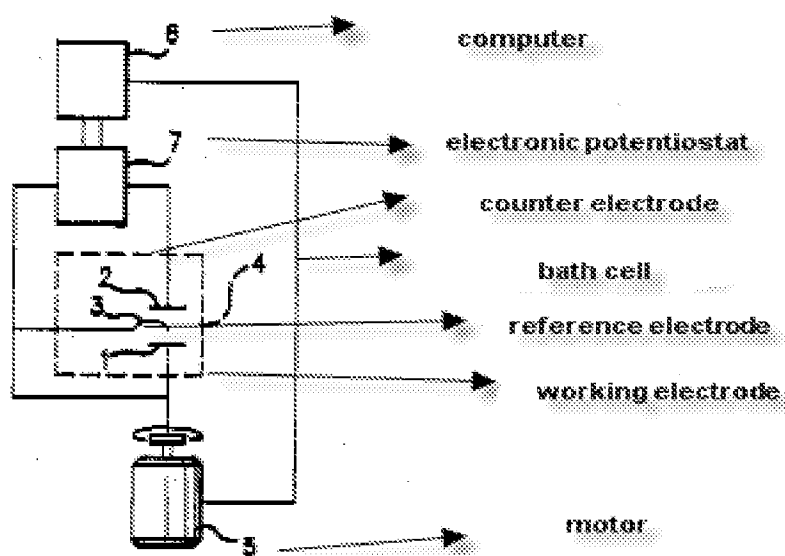


FIG.1

In re claim 11, Sonnenberg et al. disclose an apparatus for analyzing a copper electroplating solution, which comprises using the method for analyzing a copper electroplating solution of claim 7 (see col. 4, line 50 to col. 5, line 21 and FIG. 1),

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7. A method for analyzing a copper electroplating solution used in copper electroplating for filling a copper metal in a via-hole or a trench installed in a semiconductor product, which comprises using an electrochemical cell composed of a working electrode (rotary electrode), a reference electrode and a copper electrode (counter electrode) for a copper electroplating solution, electrolyzing the solution with the working electrode (rotary electrode) as a cathode so as to make the cathode current density controlled in the range of  $0.1 - 20 \text{ A/dm}^2$ , determining the time-dependent potential change between the cathode and the reference electrode for a predetermined period of time after the start of the electrolysis,

and judging the fillability with the copper electroplating solution from the time-dependent change curve profile.

In re claim 17, **Sonnenberg et al.** disclose an apparatus for analyzing a copper electroplating solution, which comprises using the method for analyzing a copper electroplating solution of claim 13 (see col. 4, line 50 to col. 5, line 21 and FIG. 1),

13. A method for analyzing a copper electroplating solution containing an additive, which comprises using an electrochemical cell composed of a working electrode (rotary electrode), a reference electrode and a copper electrode (counter electrode) for a copper electroplating solution, electrolyzing the solution with the working electrode (rotary electrode) as a cathode so as to make the cathode current density controlled in the range of  $0.1 - 20 \text{ A/dm}^2$ , and determining the time-dependent potential change for a predetermined period of time after the start of the electrolysis to thereby judge the uniformity of electrodeposition (film properties and film thickness uniformity) with the solution.

In re claim 20, Sonnenberg et al. disclose an apparatus for analyzing a copper electroplating solution, which comprises using the method for analyzing a copper electroplating solution of claim 19 (see col. 4, line 50 to col. 5, line 21 and FIG. 1),

19. A method for analyzing a copper electroplating solution used in copper electroplating for filling a copper metal in a via-hole or a trench installed in a semiconductor product, which comprises using an electrochemical cell composed of a working electrode (rotary electrode), a reference electrode and a copper electrode (counter electrode) for a copper electroplating solution, electrolyzing the solution with the working electrode (rotary electrode) as a cathode so as to make the cathode current density controlled in the range of 0.1 - 20 A/dm<sup>2</sup>, controlling the rotation of the working electrode (rotary electrode) in two stages falling within a range of 0 - 7500 rpm, determining the time-dependent potential change between the cathode and the reference electrode at different rotations, and comparing the time-dependent change curves with each other to thereby judge the fillability with the copper electroplating solution.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHIEM D. NGUYEN whose telephone number is (571)272-1865. The examiner can normally be reached on Monday-Friday (8:30 AM - 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kiem D. Nguyen/  
Examiner, Art Unit 2823

/K. D. N./  
Examiner, Art Unit 2823